ABB recently commissioned India’s first flatness control system for manufacturing aluminium foils at PG Foils Ltd that ensures consistent thickness and flatness. These parameters are extremely crucial for high quality aluminium foils required for food-grade packaging to preserve product quality and freshness while adhering to high standards of hygiene.

PG Foils chose ABB’s flatness control technology for its manufacturing unit in Pipalia Kalan, Rajasthan, where the company manufactures plain and printed aluminium foils, foil laminates and flexible packaging material for various products.

A foil rolling mill reduces the thickness of cold-rolled aluminium coils from 300 microns, the average diameter of a strand of human hair, to 6 microns. ABB’s Automatic Flatness Control (AFC) technology engineers consistent flatness at 1/6th the thickness of a human hair, suitable to be used in packaging. The high-accuracy technology allows for better flatness control with consistent flatness quality, lower material wastage, better yield, lesser breaks and lower downtime.

The scope of supply included an upgraded automation system with ABB’s powerful control platform AC 800 PEC with XF 801 fast I/O based system, critical to ensure precise thickness control while addressing challenges associated with

Flatness control technology

World class quality, food-grade aluminium foil 1/6th the thickness of a human hair at PG Foils Ltd with ABB’s automatic flatness control.
extremely thin gauges and high speed rolling that can lead to poor quality foil. A DCS 800 drive system for the mill, coiler and uncoiler ensures excellent control performance for high dynamic applications. It also includes a flatness control system on third-party Vidimon flatness measurement roll.

ABB designed and engineered a highly responsive automation system capable of excellent control performance for dynamic applications, ensuring production of high-grade aluminium foils with extremely thin gauge at high rolling speeds. It reduces differences between the user-defined profile and system limitations by dynamically varying mill operational parameters.

The system is based on two methods of control - mechanical (bending and tilting) and thermal (nozzle). A larger part of the error is addressed by mechanical control while thermal control corrects the residual flatness error.

Automatic gauge control keeps thickness deviations to a few microns ensuring higher quality of metals strips. Speed-tension optimisation, a technique used for thickness control in foil mills, helps achieve desired thickness reduction at higher mill speeds and optimisation of the throughput.

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